

1	SEQ ID NO: 29 (gi 3080420)	MSGAVLVAIAAVGNLLQGWDNATIAGAVLYIKKEFNLSPVSEGGLIVAMSLIGATLIT MGGAVMVAIAASIGNLLQGWDNATIAGAVLYIKKEFNLQSEPLIEGLIVAMFLIGATVIT MAGAVLVAIAASIGNLLQGWDNATIAGAVLYIKKEFNLHSDPLIEGLIVAM	60
	SEQ ID NO: 2		
	SEQ ID NO: 4		
	SEQ ID NO: 6		
	SEQ ID NO: 8		
	SEQ ID NO: 10		
	SEQ ID NO: 12		
	SEQ ID NO: 14		
	SEQ ID NO: 16		
61	SEQ ID NO: 29 (gi 3080420)	TCsgggadawlgrrppmlilssILYFVGSLVVMLWSPNYYVLLGRLldgfgvg1vvvt1vpiy TSpgrpradcvgrrppmlvasAVLYFVSGLVMWLWAPIVYILLARLidgfgiglavt1vply	120
	SEQ ID NO: 2		
	SEQ ID NO: 4		
	SEQ ID NO: 6		
	SEQ ID NO: 8		
	SEQ ID NO: 10		
	SEQ ID NO: 12		
	SEQ ID NO: 14		
	SEQ ID NO: 16		
121	SEQ ID NO: 29 (gi 3080420)	isetapp-eirGLINTLQPQFTG-SGGMFLSYCMVFGMSLMPSPSWRLMLGVLFIPSLVEF isetaphrxxswGXXNTLQPQFIGVXGGMFLSYCMVFGMSLMPKPDWRLMLGVLSIPLSIXYF -S---LI---GAT---I---	180
	SEQ ID NO: 2		
	SEQ ID NO: 4		
	SEQ ID NO: 6		
	SEQ ID NO: 8		
	SEQ ID NO: 10		
	SEQ ID NO: 12		
	SEQ ID NO: 14		
	SEQ ID NO: 16		

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FIG. 1A

181

SEQ ID NO: 29 (gi 3080420) 240
 GLTVFFLPESPRWLVSKGKRMLEAKRVLQRLRGREDVSGEMALLVEGLGIGGETTIEEYII
 GLTVFYLPLPESPRWLVSKGKRMFAEKRVXQRLRGREDVSEXALLVEGLGVGKDTRIXEYII
 IT-----
 TXS-----
 SEQ ID NO: 4
 SEQ ID NO: 6
 SEQ ID NO: 8
 SEQ ID NO: 10
 SEQ ID NO: 12
 SEQ ID NO: 14
 SEQ ID NO: 16

241

SEQ ID NO: 29 (gi 3080420) 300
 GPADDEVTDHDIDIAVDKD-QIKLYGAEEGLSWVARPVKG----GSTMSVLSRHGS-TMSRRQ
 GPATEAADDLVTGDKE-QITLYGPEEGQSWIARPSKGPIMLGSVVLASRHGS-MVNQS
 SEQ ID NO: 4
 SEQ ID NO: 6
 SEQ ID NO: 8
 SEQ ID NO: 10
 SEQ ID NO: 12
 SEQ ID NO: 14
 SEQ ID NO: 16

301

SEQ ID NO: 29 (gi 3080420) 360
 GSLLIDPLVLTLEGSVVHEKMPDTG---SMRSALFPHEGSMFSVGGN---QPRHEDWD---EEN
 VPLMDPIVTLFEGSVHENMPQAG---GSMRSTLFPNFGSMFSVTDQ---HAKNEQWD---EEN
 SEQ ID NO: 4
 SEQ ID NO: 6
 SEQ ID NO: 8
 SEQ ID NO: 10
 SEQ ID NO: 12
 SEQ ID NO: 14
 SEQ ID NO: 16

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FIG. 1B

361

SEQ ID NO:29 (gi 3080420)
 SEQ ID NO:2
 SEQ ID NO:4
 SEQ ID NO:6
 SEQ ID NO:8
 SEQ ID NO:10
 SEQ ID NO:12
 SEQ ID NO:14
 SEQ ID NO:16

420

LVGEGEDYPSD----HGDDSEDDLHSPLISRQTSME-KDMMPHTAH--GTLSTFRHGSQV
 LHRDDEEYASD---GAGGDYEDNLHSPLLSRQATGAEGKDIVHHGURGSALSMMRRQS--L

 SEQ ID NO:4
 SEQ ID NO:6
 SEQ ID NO:8
 SEQ ID NO:10
 SEQ ID NO:12
 SEQ ID NO:14
 SEQ ID NO:16

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421

SEQ ID NO:29 (gi 3080420)
 SEQ ID NO:2
 SEQ ID NO:4
 SEQ ID NO:6
 SEQ ID NO:8
 SEQ ID NO:10
 SEQ ID NO:12
 SEQ ID NO:14
 SEQ ID NO:16

421

QGAQGEGAGSMGIGGGWQVAWKWTEREDESQKEEGF----PGSRRGSIIVSLPG
 LGEGGDGVSSTDIGGGWQLAWKWSEKEGENGRKEGGFKRVYLLHQEGVPGSRRGSIIVSLPG

 SEQ ID NO:4
 SEQ ID NO:6
 SEQ ID NO:8
 SEQ ID NO:10
 SEQ ID NO:12
 SEQ ID NO:14
 SEQ ID NO:16

MQSGSGEQGGSTGIGGGWQLAWKWTDK--GEDGKQQGGFKRIYLHEEGVSSASRRGSIIVSLPG
 HGNSGEPTGSTGIGGGWQLAWKWSEREGPDGKKEGGFKRIYLHQDGGSRRGSVVSILPG

 GGEAVSSTGIGGGWQVAWKWSERQGEDGKKEGGFKRIYLHQEGVADSRRGSVVSILPG

481

SEQ ID NO:29 (gi 3080420)
 SEQ ID NO:2
 SEQ ID NO:4
 SEQ ID NO:6
 SEQ ID NO:8
 SEQ ID NO:10
 SEQ ID NO:12
 SEQ ID NO:14
 SEQ ID NO:16

481

GDGTGEA---DFVQASALVSQPALYSKDLIKEHT-IGPAMVHPSE-TTKGSIWHDLHDPGV
 GGDVLEGS-EFVHAAALVQSALFSKGLAEPRM-SDAMVHPSEVAAKGSRWKDLEPGV

 SEQ ID NO:4
 SEQ ID NO:6
 SEQ ID NO:8
 SEQ ID NO:10
 SEQ ID NO:12
 SEQ ID NO:14
 SEQ ID NO:16

EG----EFVQAAALVSQPALYSKELIDGH-PVGPAMVHPSETASKGPSWKALLEPGV
 GDLPTD---SEVVQAAALVSQPALYNEDLMRQR-PVGPAMIHPSSETIAKGPSWSDLFEPGV

 GGDATQGGSGFIHAAALVSHSALYSKDLMEERMAAGPAMIHPLEAAPKGSIIWKDLEPGV

FIG. 1C

541

SEQ ID NO: 29 (gi 3080420)

SEQ ID NO: 2 KRALVVGVLQILQQFSGINGVLYTPQILEQAGVGILLSNMGISSSSASLILISALITTFV
 SEQ ID NO: 4 RRALLVVGVLQILQQFAGINGVLYTPQILEQAGVAVILSKFGLSSASASILISSLTTFI,L
 SEQ ID NO: 6 VL
 SEQ ID NO: 8 KHALVVGVLQILQQFSGINGVLYTPQILEEAGVEVILSDIGIGSESASFLISAFITTFI,
 SEQ ID NO: 10 KHALIVVGVMQILQQFSGINGVLYTPQILEQAGVGYLLSSLGLGSTSSFLISAVTTLL
 SEQ ID NO: 12 RRALFVGVLQIQLQQFAGINGVLYTPQILEQAGVAVILSNLGLSSASASLILISSLTTFI,
 SEQ ID NO: 14 KHALFVGIGLQILOQQFAGINGVLYTPQILEQAGVGVILSNIGLSSASASLILISALTTLL
 SEQ ID NO: 16

601

SEQ ID NO: 29 (gi 3080420)

MLPAIAVAMRLMDLSGRRTLLTIPILLASLLVLVISNLVHMNSIVHAVLSTVSVVLYF
 MLPCIGFAMILMDLSGRRFLLGTIPILLASLVLVVSNLIDLGLTLAHALLSTISVIVYF
 SEQ ID NO: 4
 SEQ ID NO: 6
 SEQ ID NO: 8 MLPCIGVAMKLMDSGRRQLLTTIPVLTIVSLLILVIGSLVNFGNVAAHAAISTVSVVLYF
 SEQ ID NO: 10 MLPCIAIAMRLMDISGRRTLLSTIPVLLIAALLLVLGSLVLDLGSTANASISTISVIVYF
 SEQ ID NO: 12
 SEQ ID NO: 14 MLPSIGVAMRLMDMSGRRFLLSTIPVLLVNVINLSTVPHAVLSTVSVVYF
 SEQ ID NO: 16 MLPSIGIAMIAMRLMDMSGRRFLLSTIPVLLVALAVLVLVNVLDVGTMVHAALSTISVIVYF

661

SEQ ID NO: 29 (gi 3080420)

CFEVMGEGGPAPNILCSEIFPTRVRGICIAICALTFWICDIIIVTYSLPVILKSIGILAGVFG
 CCFVVMGFGGPPIPNIILCAEIFPTRVRGLCIAICAFTFWIGDIIIVTYSLPVMLNAIGLAGVFS
 CCFVVMGFGGPPIPNIILCAEIFPPTVRGICIAICALTFWICDIIIVTYSLPVMLNAIGLAGVFG
 CCFVVMGFGGPPIPNIILCSEIFPTRVRGLCIAICALVFWIGDIIIVTYSLPVMLGSLGIAGVFA
 CCFVVMGFGGPPIPNIILCAEIFPTEWICDIIIVTYSLPVMLNSVGLAGVFG
 CCFVVMGEGGPPIPNIILCAEIFPPTVRGICIAICALTFWICDIIIVTYSLPVMLNAIGLAGVFG
 CCFVVMGEGGPPIPNIILCAEIFPPTSVRGICIAICALTFWICDIIIVTYSLPVMLNAIGLAGVFG

FIG. 1D

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FIG. 1E

721 767
SEQ ID NO: 29 (gi 3080420) MYAIVCCISWVFVFIKVPEVKGMPLLEVITEFFSVGARQAEAA--KNE
SEQ ID NO: 2 IYAVVCLISFVVFVLKVPEVKGMPLLEVITEFFAVGAKQAAA----KA
SEQ ID NO: 4
SEQ ID NO: 6 IYAVVCLILAFLEVEMKVPEVKGMPLLEVITEFFSVGAKQAKQ-AKE----D
SEQ ID NO: 8 IYAVVCFISWIFVFLKVPEVKGMPLLEVISEFFSVGAKQAAASA--KNE
SEQ ID NO: 10 IYAVVCFIAWVFVFLKVPEVKGMPLLEVIEFFSVGAKQFDDA--KHN
SEQ ID NO: 12 IYAVVCCIAFVVFVYLKVPEVKGMPLLEVITEFFAVGAKQ-AQA--TIA
SEQ ID NO: 14 IYAVVCLAFVVFVYMKVPEVKGMPLLEVITEFFSVGAKQ-GKE--ATD
SEQ ID NO: 16

SEQ	ID	NO:	30
SEQ	ID	NO:	18
SEQ	ID	NO:	20
SEQ	ID	NO:	22
SEQ	ID	NO:	24
SEQ	ID	NO:	26
SEQ	ID	NO:	28
1			
60			
MSEG			---TNKAMSDPPPTTAKVIA--
SR			---AQSEPSTMASA--
M			---ASD--ELAK--
			---AVEPRKKGNVKYASICAI
			---MASA--AL--PEAVAPKKGNVREFAFACAI
			---MTEG--KLVEAAEAH--
			---KTLQ--DF-DPPKKR-KRN--
			---KYAFACAM--
			---MDRA--AL--PAAVEPKKKGNVREFAFACAI
			---MKMS--PERKGAEDEEGSRMASA--ALPEPGAVHPRNKGNEFKYAAFTCAI

61	SEQ	ID	NO: 30	LASMTSILLGY--	120
	SEQ	ID	NO: 18	LASMTSILLGY--	
	SEQ	ID	NO: 20	LASMASVILGY--	
	SEQ	ID	NO: 22	LASMTSILLGY--	
	SEQ	ID	NO: 24	LASMTSILLGY--	
	SEQ	ID	NO: 26	LASMTSILLGY--	
	SEQ	ID	NO: 28	CASMATIVLGY--	

SEQ	ID NO: 30	SEQ	ID NO: 18	SEQ	ID NO: 20	SEQ	ID NO: 22	SEQ	ID NO: 24	SEQ	ID NO: 26	SEQ	ID NO: 28
121	ILNIVYCYCLEFGSEAAGRTSDWIGRRYTIIVGALLMGEFATNYAFLMVGRFVTGIGV	121	ILNVYSLIGSXAAAGRTSDWIGRRXTIVFAAVIFFAGAXLMLGFAVNYYWMLMGEFREVAGIGV	121	ILSLYSLIGSSEAAGRTSDRIGRRLTVVFAAVIFFAGXLLMGEFREVAGIGV	121	ILNLYSLIGSSEAAGRTSDWIGRRYTIIVFAAVIFFAGXFLMGEFREVAGIGV	121	ILNLYSLIGSCLAGRTSDWIGPRYTIIVFAGTIEFVGALLMGEFSPNYSFLMGEFREVAGIGV	121	ILNVYSLIGSSEAAGRTSDWIGRRFTIVFAAVIFFAGALLMGEFREVAGIGV	121	ILSVYALIGSFLGARTSDWVGRRVTVVFAAAIENNGSLLMGEFAVNYYAMIMVGRFVTGIGV
180	ILNIVYCYCLEFGSEAAGRTSDWIGRRYTIIVGALLMGEFATNYAFLMVGRFVTGIGV	180	ILNVYSLIGSXAAAGRTSDWIGRRXTIVFAAVIFFAGAXLMLGFAVNYYWMLMGEFREVAGIGV	180	ILSLYSLIGSSEAAGRTSDRIGRRLTVVFAAVIFFAGXLLMGEFREVAGIGV	180	ILNLYSLIGSSEAAGRTSDWIGRRYTIIVFAAVIFFAGXFLMGEFREVAGIGV	180	ILNLYSLIGSCLAGRTSDWIGPRYTIIVFAGTIEFVGALLMGEFSPNYSFLMGEFREVAGIGV	180	ILNVYSLIGSSEAAGRTSDWIGRRFTIVFAAVIFFAGALLMGEFREVAGIGV	180	ILSVYALIGSFLGARTSDWVGRRVTVVFAAAIENNGSLLMGEFAVNYYAMIMVGRFVTGIGV

FIG. 2A

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181
SEQ ID NO: 30
SEQ ID NO: 18
SEQ ID NO: 20
SEQ ID NO: 22
SEQ ID NO: 24
SEQ ID NO: 26
SEQ ID NO: 28

240
GYALMIAPIVYTAEVSPASSRGFLTSFPEVFINAGILLGYISNLAFFSSLPTHLISWRVMLGI
GYGGMIAPIVYTAEISPAASRGFLTTPEVEFINIGILLGYLSNFAEARLPLHIGWRVMLAI
GYALMIAPIVYTAEVSPASSRGFLTSFPEVFINGILLGYVSNYAFSRLPLNLGWRIMLGI
GYALMIAPIVYTAEVSPASSRGFLTSFPEVFINGILLGYISNYAFSKLTLKVGWRMMLGV
GYALMIAPIVNTGEVSPASARGVLTTSFPEVFINGILLGYVSNFAEARLSSLRLGWRIMLGI
GYAIMVAPVYTPEVSPASARGFLTSFTEVEFINVGILLGYVSNYAFARLPLHLSWRVMLGI

241
SEQ ID NO: 30
SEQ ID NO: 18
SEQ ID NO: 20
SEQ ID NO: 22
SEQ ID NO: 24
SEQ ID NO: 26
SEQ ID NO: 28

241
GAIPSIFLAIGVLAMPESPRWLVMQGRGLGDAKKVLNRIIDSPEEAQIQLSEIKQTAGI PA
GAVPSGLLALLVFCMPESPRWLVLKGRLADARAVLEKTSATPEEAERLADIKAAAGI PK
GAAPSVLALLMVLGMPESPRWLVMKGRRLADAKVVLEKTSDTAAEAERLADIKAAAGI PE
GAIPSVLLTVGVLAMPESPRWLVMRGRLGEARKVLNKTSDSKEEAQIQLRAEIKQAAGI PE
GAVPSVLAFMVVLGMPESPRWLVMKGRRLADAKVVLAKTSDTPEEAERIADIKTAAGI PL
GAVPSALLAIVFGMPESPRWLVMKGRRLADARAVIAKTSDTPEEAVERLDQIKAAAGI PR

301
SEQ ID NO: 30
SEQ ID NO: 18
SEQ ID NO: 20
SEQ ID NO: 22
SEQ ID NO: 24
SEQ ID NO: 26
SEQ ID NO: 28

301
ECDEDIYKVEKTKIKSGNA-VWKELFFNPTPAVRRAVIAGIGIHFFQQASGIDAVVLYSP
GLDGDDVVTVPGKEQGGGELQVWKKLILSPTPAVRRLILSPTPAMRRLILSPTPAIRHIVIAALGI
ELDGDDVVTVPK-RGSGNEKRVWKKELILSPTPAIRHIVIAALGIHFFQQASGVDAVVLYSP
SCNDVVQVNKQS--NGEG-VWKEFLFLYPTPAIRHIVIAALGIHFFQQASGVDAVVLYSP
GLDGDDVVVPKPKNGSSEEKRVLKDLILSPTIAMRHILIAIGIHEFQQSSGIDAVVLYSP
ELDGDDVVMP-KTKGGQEKQVWKKELIFSPTPAMRRILLAAALGIHEFQQATGSDSVVLYSP

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FIG. 2B

FIG. 2C

361

SEQ ID NO: 30
SEQ ID NO: 18
SEQ ID NO: 20
SEQ ID NO: 22
SEQ ID NO: 24
SEQ ID NO: 26
SEQ ID NO: 28

420

RIFQSAGITNARKQOLLATVAVGVVKTLFILVATFQLDKYGRRPLLLTSVGGMIIAILTLA
RLFKSAGITDDNKLILGVTCAVGVTKTEFILVATFLLDRAGRRLPLLIISTGGMIVSLLICIG
LVFKSPGLTNDKHFLLGTTWPFGVTKRLFILLATFFIDGVGRRPLLLGSTGGIILSLLIG
RIFEKAGITNDTHKILLATVAVGEVKTVFILAATFTLDRVGRRPLLLSVGGMVLVSLTLA
LVFKSAGITGDSRLRGTTVAVGATNTVFLILVATFLLDRIRRRPLVLSTGGMLVSLVGLA
RVFQSAGITGDNHLLGATCAMGVMKTLFILVATFQLDRVGRRPLLLTSTAGMLACLLIGLGA

421

MSLTVID-HSHHKITWAIALCITMVCNAVASFSIGLGPITWVYSSVEPLRLRAQGTSMG
SGLTVAGHHPDTKVAWAVALCIASTLSYIAFFSIGLGPITGVYTSEIFPLQVRALGFAVG
AGLTVVVGQHPDAKIPWAIGLSSIASTLAYVAFFSIGLGPITWVYSSIEFPLRLRAQGAAG
ISLTVID-HSERKLMWAVGSSSIAMVLAYVATFSIGAGGPITWVYSSIEFPLHVRAVGCSEL
TGLTVISRHPDEKITWAIWLICFICIMAYVAFFSIGLGPITWVYSSIEFPLHVRAVGCSEL
TGLTVVGRHPDAKVPWAIGLCIVSILAVSFFSIGLGPLTSVYVTSEVFPLRVRAVGCSEL

480

481

VAVNRRVSGVISIFLPLSHKITGGAAFLLFGGGIAIIIAWFFFLPETRGRTLENMHEI
VASNRVTSAVISMTFLSLSKAITIGGSEFLYSGIAAVAWFFFETCLPETRGRTLEEMGKL
VAANRVTSGVISMTFLSLSKAITIGGSEFLYSGIAALAAWVFFFYTYLPETRGRTLEEMSKL
VAVNRTTSAVVSMTFLSLTRAITIGGAFFLYCGIATVGWIFFYTVLPETRGKTLDEMEGS
VAVNRLTSGVISMTFLSLSKAITIGGAFFLFAGIASFAWVFFFAYLPETRGRTLEDMSSL
TSCNRVTSAAVSMSFLSLSKAITIGGSEFLYAGIAAIGWIFFFTIPETRGRTLEIGKL

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FIG. 2D

541

SEQ	ID NO: 30
SEQ	ID NO: 18
SEQ	ID NO: 20
SEQ	ID NO: 22
SEQ	ID NO: 24
SEQ	ID NO: 26
SEQ	ID NO: 28

590

FEDFRWRESFPGNKSNNDENSTRKQSNGNDKSQVQLGETTSTTVTNDNH
-----TS-----
FGM-----PDTGMAEEAEDA-AAKEKVVELPSSK-----
FGD-----TAAASESDEPAKEK---KKVEMAATN-----
FGTFRSKSN---ASKAVENENG---QVAQVQLG---TNVQT
FGN-----TATHKQGAAEADDAGEKKVEMAATN-----
FGM-----TDTAVEAQDTAT-KDKAKVGEM---N-----